On the Cultivation of *Drosera Linearis*

Part II

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Since my last article, (CPN 17:114-117), I have made improvements in my growing system and revisions with some good news on growing this challenging little sundew on a long-term basis.

I made the improvement of getting rid of the siphon and putting a rot-proof material (fiberglass) in the bottom of a plastic pot to hold the fine native marl. This improved the water flow through the culture. Once again the hibernacula started growing in the spring, but two weeks later the plants waned and died. I figured that a build up of nutrients was occurring due to evaporation of water out of the culture.

By late spring I planned on building a solar still and gathered materials for a modified apparatus. Figure 1 shows distilled water flowing through the marl into the reservoir and out of the reservoir purge port to prevent mineral concentration.

After setting this up and letting it run for a few days, I collected some plants and subjected them to a very meaningful test. I put fresh plants into the same marl that killed the previous plants. How cruel! Deliberately sending sundews to their seemingly certain doom. Definitely not a test for the faint of heart. Week after week I checked the culture and was greeted by their fully adorned glistening tentacles, just like the wild plants. The culture plants formed their hibernacula at the same time as the wild plants in early September after a cooler than normal August. Just as in a natural habitat this apparatus closely mimics the natural purging process of the seeps of a marl fen.

Cultivation apparatus for *D. linearis*. Photos by author.

In a solar still diameter of 24" (61 cm) I had a yield of 297 mL of distilled water after a sunny day. The still seemed most active in late afternoon when it yielded one drop every five seconds. The solar still tends in part to play the role of my early flotation device. For this reason I removed the bicycle inner tubes and downsized the reservoir. Downsizing the reservoir is not only for simplification, but it is important that the condensation rate of the still is greater than the evaporation rate of the culture and reservoir if the purging process is to be effective.

I am using a 5½" (14 cm) diameter pot for the plants that is working well. The culture support plate not only supports the pot but reduces evaporation from the reservoir. The reservoir is necessary to keep the water level in the plantings nearly constant as well as providing a backup supply of water on cloudy days. What is nice about this setup is that the plants do not require attention on a daily basis.

The garden hose is not used as a hose at all in the still. The convenience of a readily available flexible material to line the inside of the still is the reason for it. Condensate is collected between the wall of the still and the top part of the hose. Then the condensate flows out of a small hole and through a small tube to the culture. A silicone sealant was placed around the contact point of the garden hose and still wall as well as around the rim of the still where the glass goes on. Better still yields can be obtained if the still container is insulated and the glass allowed to cool by wind.

Drosera linearis transplants easily during the growing season if there is no delay. I am not sure the plants will hold out if mailed. The plants transplant most readily after the hibernacula form in the autumn. Here the plants resist coming out of dormancy during warm periods in the autumn.

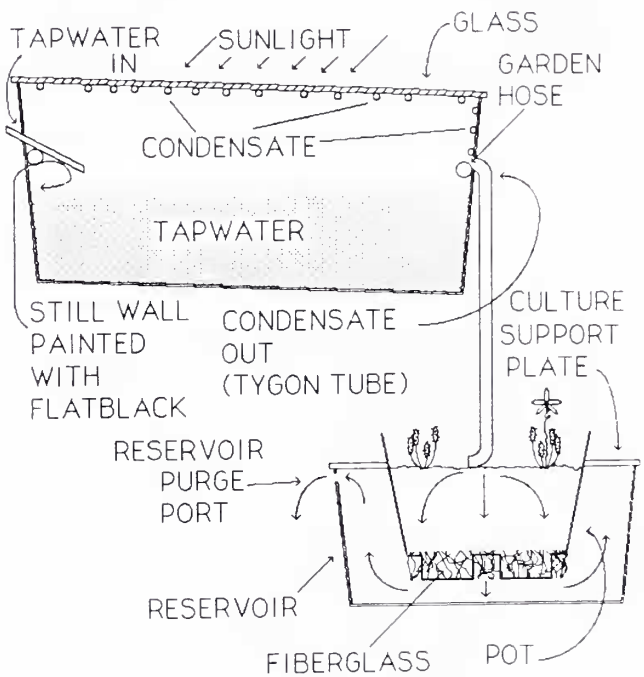

FIG 1

Drawing by Frank McLanghlin

Summary on the Cultivation of *Drosera Linearis*

Dormancy – Drosera linearis goes into dormancy by mid September to early October in this location. To imitate the dormancy period if you cannot expose the plants to winter, put the plants in a refrigerator at a temperature of 34° - 39°F (1° - 4°C) after the hibernacula form. I would place the pot in another reservoir so that water just covers the hibernacula and is cone shaped so it does not crack during freezing. Put plastic wrap over the reservoir. Using fungicide as a precaution is fine, but I never use them. By late December, I put the hibernacula into the freezer at 0° – -25°F (-18°C – -4°C). I have good reason to believe that the hibernacula will survive temperatures even lower than those of more northern locations. For January and February I would put the hibernacula into the refrigerator at least once a month for a thaw and then back into the freezer. This freezing and thawing might be important for biochemical reactions that are needed for the active growing season. This might also be important for many seeds of the temperate regions of the world (stratification). Place the hibernacula into the refrigerator by March. When mid-April comes around the hibernacula can come out of dormancy.

Drosera linearis grows best in full sunlight for the entire day. I have never found plants that were shaded for the morning or afternoon by trees. When properly established, *Drosera linearis* thrives in a wide range of temperatures and humidities and is not adversely affected by any extreme. *Drosera linearis* will survive hot muggy weather without much relief in the evening for days or even weeks and still bear its white flowers and glistening tentacles. It also does not mind cool, dry weather after the passage of a cold front.

For the planting medium I prefer marl over milled peat-sand mixtures. The short root system anchors better in marl. I can conceive growing the plants in milled peat-sand mixture in a greenhouse with this system if the still will work there. Milled peat spatters in the rain, and I do not care for seeing peat particles sticking to the Sundew's leaves. Any evidence of moss growth indicates the total nutrient concentration of the medium is too high for *D linearis*. Marl is rot-proof so that there is no chance of nutrients being released by fungus or by any insect that abandons it when it finds it inedible. The only disadvantage with marl (calcium carbonate) is that it is slightly soluble in distilled water. This means adding marl to the culture once in a great while.

This basic apparatus with modifications might be useful for *Heliamphora* which also grows in a nutrient-purged habitat.

(Ed. Note. In a North American marl bog, the soil substrata is not pure marl (calcium carbonate) except possibly in the upper 1-2 mm. The "marl soil" is actually a mixture of marl, peat and sand in varying proportions).

D. linearis in cultivation.

D. linearis in habitat growing in shallow water.

Literature Review

DIBBLE, A.C., et.al. 1989. Maine's official list of endangered and threatened plants. Rhodora 91:244-269.

In this list are included three species of CP as threatened **in state.** These are: *Drosera anglica, D. linearis* and *Utricularia resupinata*. There is a brief discussion of the history of efforts to conserve plants in Maine, and ongoing efforts. DES

DOWHAN, J.J. and R. ROSZA. 1989. Flora of Fire Island, Suffolk County, New York. Bull. Torrey Bot. Club 116:265-282.

This is a comprehensive listing of the flora of this narrow barrier island just south of Long Island, all of which is actually part of a coastal plain system that was once continuous with the New Jersey pine barrens. Some CP were listed.

Sarracenia purpurea is listed as rare in two locations and is possibly introduced. *Drosera intermedia* and *D. rotundifolia* are frequent in fens and around freshwater marshes. *Utricularia subulata* and *U. vulgaris* are both listed as rare as far as numbers of locations, but locally abundant in these. This reviewer is rather surprised at the paucity of Utricularias, and that *D. filiformis* was not found since it is on Long Island. DES

EARLEY, LAWRENCE S. 1989. Wetlands in the highlands. Wildlife in North Carolina 53:10-16.

This article by staff writer Earley (excellent color photos by staff photographer Ken Taylor) discusses boglands in the North Carolina mountains primarily, but does also refer briefly to